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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,380	07/22/2003	Robert Mulroy	06727/012001	1018

21559 7590 09/26/2006

CLARK & ELBING LLP
101 FEDERAL STREET
BOSTON, MA 02110

EXAMINER	
WAX, ROBERT A	

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/624,380	MULROY ET AL.	
	Examiner	Art Unit	
	Robert A. Wax	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-76* is/are pending in the application.

4a) Of the above claim(s) *1-15 and 20-76* is/are withdrawn from consideration.

5)☒ Claim(s) *16* is/are allowed.

6)☒ Claim(s) *17 and 18* is/are rejected.

7)☒ Claim(s) *19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/030,351.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20050330*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: Attachment

DETAILED ACTION

Election/Restrictions

1. Claims 1-15 and 20-76 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on June 30, 2006.

Information Disclosure Statement

2. The information disclosure statement filed March 30, 2005 has been considered. Please see the attached initialed PTO-1449s.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The instant claims read on fragments of non-glycosylated human alpha-fetoprotein. Thus, the claims read on any fragment of any size not necessarily having

any function at all. The scope of the instant claims is not commensurate with the enablement of the instant disclosure, because practice of the claimed invention would require undue experimentation by an artisan of ordinary skill in the art. The instant specification is not enabling for claims drawn to fragments having no defined activity.

The factors to be considered in determining whether undue experimentation is required are summarized In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). The court in Wands states: "Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

In the instant case, (1) the amount of experimentation is large because the number of possible fragments is large; (2) the amount of guidance provided by the specification is zero since fragments are only mentioned but never fully discussed. One

of skill in the art would have no idea what function the fragments might have and, thus, have no idea how to use such fragments. Continuing, (3) the specification is totally devoid of any working examples of fragments, functional or otherwise; as for the next Wands factor, (4) the nature of the invention is a fragment having the same function as full-length α-fetoprotein. The prior art (5) shows that α-fetoprotein is well known but no fragments are known that have the function of the full length protein; (6) the relative level of skill in this art is very high; (7) the predictability of the art is zero since the function of the fragments is unknown. Finally, (8) the claims are enormously broad because of the variability of the fragments and the potential variability of their functions

Based on this analysis, the conclusion that it would require undue experimentation to practice the instant invention is inescapable.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 17 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lichenstein et al.

Lichenstein et al. teach a protein having SEQ ID No.: 6 as their SEQ ID No.: 4. This clearly anticipates claim 17. Please see Attachment B to this Office action which shows the sequence alignment.

7. Claim 17 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Economou et al.

Economou et al. teach a protein having SEQ ID No.: 6 as their SEQ ID No.: 2. This clearly anticipates claim 17. Please see Attachment A to this Office action which shows the sequence alignment.

Allowable Subject Matter

8. Claim 16 is allowed because the recited mutation is neither taught nor suggested by the prior art.

9. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The fragments all have the mutation recited in claim 16, which are not taught by the prior art, and are therefore allowable.

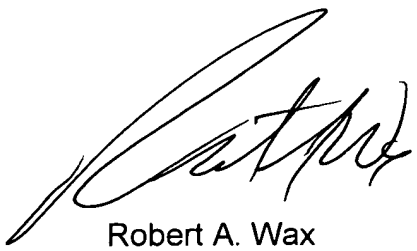
Conclusion

10. Claim 16 is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Wax whose telephone number is (571) 272-0623. The examiner can normally be reached on Monday through Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon P. Weber can be reached on (571) 272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Robert A. Wax
Primary Examiner
Art Unit 1653

RAW

US 20030143237A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2003/0143237 A1

Economou et al. (43) Pub. Date: Jul. 31, 2003

(54) METHOD AND COMPOSITIONS FOR TREATING HEPATOCELLULAR CANCER

(76) Inventors: James S. Economou, Pacific Palisades, CA (US); Lisa H. Butterfield, Long Beach, CA (US); Antoni Ribas Bruguera, Los Angeles, CA (US)

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SHELDON & MAK
9th Floor
225 South Lake Avenue
Pasadena, CA 91101 (US)

(21) Appl. No.: 10/214,725

(22) Filed: Aug. 7, 2002

Related U.S. Application Data

(60) Continuation of application No. 09/781,844, filed on Feb. 12, 2001, now abandoned. Continuation of application No. PCT/US01/04539, filed on Feb. 12, 2001, which is a continuation-in-part of application No. 09/662,505, filed on Sep. 14, 2000, now abandoned, and which is a continuation-in-part of application No. 09/660,252, filed on Sep. 12, 2000, now abandoned, which is a division of application No. 09/373,913, filed on Aug. 12, 1999, now abandoned, which is a continuation of application No. PCT/US98/02753, filed on Feb. 13, 1998.

(60) Provisional application No. 60/339,690, filed on Dec. 12, 2001. Provisional application No. 60/181,966, filed on Feb. 10, 2000. Provisional application No. 60/038,375, filed on Feb. 13, 1997.

Publication Classification

(51) Int. Cl.[7] A61K 39/00

(52) U.S. Cl. 424/185.1; 424/93.7

(57) ABSTRACT

A method for preventing or for treating cancer in a mammal, where the cancer cells express at least a part of an alpha fetoprotein molecule at the cell surface. The method comprises creating an immune response in the mammal to at least part of the amino acid sequence of an alpha fetoprotein molecule, where the immune response comprises activating alpha fetoprotein peptide specific T lymphocytes against the cancer cells, and where the part of the alpha fetoprotein molecule is selected from the group consisting of residues 137-145 of SEQ ID NO:2, and residues 325-334 of SEQ ID NO:2 and a combination of the preceeding.

Attachment A

Sequence alignment between SEQ ID 6 and SEQ ID 2 of 2003/0143237

ADD84895
ID ADD84895 standard; protein; 609 AA.
XX
AC ADD84895;
XX
DT 29-JAN-2004 (first entry)
XX
DE Human alpha fetoprotein (AFP).
XX
KW Cancer; alpha fetoprotein; AFP; cell surface; T lymphocyte;
KW hepatocellular carcinoma; HCC; human; cytostatic.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Region 137. .145
FT /note= "Specifically claimed in Claim 1"
FT Region 325. .334
FT /note= "Specifically claimed in Claim 1"
XX
PN US2003143237-A1.
XX
PD 31-JUL-2003.
XX
PF 07-AUG-2002; 2002US-00214725.
XX
PR 13-FEB-1997; 97US-0038375P.
PR 13-FEB-1998; 98WO-US002753.
PR 12-AUG-1999; 99US-00373913.
PR 10-FEB-2000; 2000US-0181966P.
PR 12-SEP-2000; 2000US-00660252.
PR 14-SEP-2000; 2000US-00662505.
PR 12-FEB-2001; 2001US-00781844.
PR 12-FEB-2001; 2001WO-US004539.
PR 12-DEC-2001; 2001US-0339690P.
XX
PA (ECON/) ECONOMOU J S.
PA (BUTT/) BUTTERFIELD L H.
PA (BRUG/) RIBAS BRUGUERA A.
XX
PI Economou JS, Butterfield LH, Ribas Bruguera A;
XX
DR WPI; 2003-851778/79.
DR N-PSDB; ADD84894.
XX
PT Preventing or treating cancer in a mammal by creating an immune response
PT in the mammal to at least part of the amino acid sequence of an alpha
PT fetoprotein molecule.
XX
PS Claim 3; SEQ ID NO 2; 15pp; English.
XX
CC The present invention relates to a method for preventing or treating
CC cancer in a mammal. The method comprises creating an immune response in
CC the mammal to at least part of the amino acid sequence of alpha
CC fetoprotein (AFP). The cancer cells express at least a part of an alpha
CC fetoprotein molecule at the cell surface. The immune response comprises
CC activating AFP peptide-specific T lymphocytes against the cancer cells.
CC The method is particularly useful for preventing or treating
CC hepatocellular carcinoma (HCC) in humans. The present sequence represents
CC human AFP.
XX
SQ Sequence 609 AA;

Query Match 99.9%; Score 3191; DB 7; Length 609;
Best Local Similarity 99.8%; Pred. No. 3.2e-290;
Matches 608; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

```
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Qy         61 KEVSKMVKDALTAIEKPTGDEQSSGCLENQLPAFLEELCHEKEILEKYGHSDCCSQSEEG 120
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Qy        121 RHNCFLAHKKPTPASIPLFQVPEPVTSCEAYEEDRETFMNKFIYEIARRHPFLYAPTILL 180
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Db        121 RHNCFLAHKKPTPASIPLFQVPEPVTSCEAYEEDRETFMNKFIYEIARRHPFLYAPTILL 180

Qy        181 WAARYDKIIPSCCKAENAVECFQTKAATVTKELRESSLLNQHACAVMKNFGTRTFQAITV 240
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Db        241 TKLSQKFTKVNFTEIQKLVLDVAHVHEHCCRGDVLDCLQDGEKIMSYICSQQDTLSNKIT 300

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Db        301 ECCKLTTLERGQCIIHAENDEKPEGLSPNLNRFLGDRDFNQFSSGEKNIFLASFVHEYSR 360

Qy        361 RHPQLAVSVILRVAKGYQELLEKCFQTENPLECQDKGEEELQKYIQESQALAKRSCGLFQ 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        361 RHPQLAVSVILRVAKGYQELLEKCFQTENPLECQDKGEEELQKYIQESQALAKRSCGLFQ 420

Qy        421 KLGEYYLQNAFLVAYTKKAPQLTSSELMAITRKMAATAATCCQLSEDKLLACGEGAADII 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        421 KLGEYYLQNAFLVAYTKKAPQLTSSELMAITRKMAATAATCCQLSEDKLLACGEGAADII 480

Qy        481 IGHLCIRHEMTPVNPGVGQCCTSSYANRRPCFSSLVVDETYVPPAFSDDKFIFHKDLCQA 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        481 IGHLCIRHEMTPVNPGVGQCCTSSYANRRPCFSSLVVDETYVPPAFSDDKFIFHKDLCQA 540

Qy        541 QGVALQTMKQEFLINLVKQKPQITEEQLEAVIADFSGLLEKCCQGQEQEVCFAEEGQKLI 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        541 QGVALQTMKQEFLINLVKQKPQITEEQLEAVIADFSGLLEKCCQGQEQEVCFAEEGQKLI 600

Qy        601 SKTRAALGV 609
              |||||||||
Db        601 SKTRAALGV 609
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US005652352A

United States Patent [19]

Lichenstein et al.

[11] Patent Number: 5,652,352

[45] Date of Patent: Jul. 29, 1997

[54] **AFAMIN: A HUMAN SERUM ALBUMIN-LIKE GENE**

[75] Inventors: **Henri Stephen Lichenstein**, Ventura; **David Edwin Lyons**, Thousand Oaks, both of Calif.; **Mark Matsuo Wurfel**, New York; **Samuel Donald Wright**, Larchmont, both of N.Y.

[73] Assignees: **Amgen Inc.**, Thousand Oaks, Calif.; **The Rockfeller University**, New York, N.Y.

[21] Appl. No.: **222,619**

[22] Filed: **Mar. 31, 1994**

[51] Int. Cl.[6] C07H 21/02; C07H 21/04; C12P 21/00

[52] U.S. Cl. 536/23.5; 536/23.1; 435/69.1

[58] Field of Search 435/6, 320.1, 69.1; 536/23.1, 23.5, 24.3, 23.2, 24.5; 514/44

[56] **References Cited**

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0353814 2/1990 European Pat. Off. .

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Primary Examiner—Eggerton A. Campbell
Attorney, Agent, or Firm—Daniel R. Curry; Ron K. Levy; Steven M. Odre

[57] **ABSTRACT**

The invention relates to a novel human serum protein and nucleic acid referred to as AFM, which has one or more activities in common with human serum albumin, human a-fetoprotein, or human vitamin D binding protein and which has an apparent molecular weight by SDS-PAGE of 87 kd; variants thereof; and related genes, vectors, cells and methods.

12 Claims, 12 Drawing Sheets

Attachment B

Sequence alignment between SEQ ID No. 6 and SEQ ID No. 4 of 5,652,352.

US-08-222-619-4
; Sequence 4, Application US/08222619
; Patent No. 5652352
; GENERAL INFORMATION:
; APPLICANT: Lichenstein, Henri
; APPLICANT: Lyons, David
; APPLICANT: Wurfel, Mark
; APPLICANT: Wright, Samuel
; TITLE OF INVENTION: Afamin: A Human Serum Albumin-Like
; TITLE OF INVENTION: Protein
; NUMBER OF SEQUENCES: 33
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Amgen Center, Patent Operations/RRC
; STREET: 1840 DeHavilland Drive
; CITY: Thousand Oaks
; STATE: California
; COUNTRY: U.S.
; ZIP: 91320-1789
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/222,619
; FILING DATE:
; CLASSIFICATION: 435
; INFORMATION FOR SEQ ID NO: 4:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 609 amino acids
; TYPE: amino acid
; STRANDEDNESS: unknown
; TOPOLOGY: unknown
; MOLECULE TYPE: protein
US-08-222-619-4

Query Match 99.9%; Score 3191; DB 1; Length 609;
Best Local Similarity 99.8%; Pred. No. 3.7e-314;
Matches 608; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

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Qy          1 MKWVESIFLIFLLNFTESRTLHRNEYGIASILDSYQCTAEISLADLATIFFAQFVQEATY 60
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Qy        121 RHNCFLAHKKPTPASIPLFQVPEPVTSCEAYEEDRETFMNKFIYEIARRHPFLYAPTILL 180
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Qy        181 WAARYDKIIPSCCKAENAVECFQTKAATVTKELRESSLLNQHACAVMKNFGTRTFQAITV 240
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Qy        241 TKLSQKFTKVXFTEIQKLVLDVAHVHEHCCRGDVLDCLQDGEKIMSYICSQQDTLSNKIT 300
              |||||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 TKLSQKFTKVNFTEIQKLVLDVAHVHEHCCRGDVLDCLQDGEKIMSYICSQQDTLSNKIT 300

Qy        301 ECCKLTTLERGQCIIHAENDEKPEGLSPNLNRFLGDRDFNQFSSGEKNIFLASFVHEYSR 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        301 ECCKLTTLERGQCIIHAENDEKPEGLSPNLNRFLGDRDFNQFSSGEKNIFLASFVHEYSR 360

Qy        361 RHPQLAVSVILRVAKGYQELLEKCFQTENPLECQDKGEEELQKYIQESQALAKRSCGLFQ 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        361 RHPQLAVSVILRVAKGYQELLEKCFQTENPLECQDKGEEELQKYIQESQALAKRSCGLFQ 420
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Qy        421 KLGEYYLQNAFLVAYTKKAPQLTSSELMAITRKMAATAATCCQLSEDKLLACGEGAADII 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        421 KLGEYYLQNAFLVAYTKKAPQLTSSELMAITRKMAATAATCCQLSEDKLLACGEGAADII 480

Qy        481 IGHLCIRHEMTPVNPGVGQCCTSSYANRRPCFSSLVVDETYVPPAFSDDKFIFHKDLCQA 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        481 IGHLCIRHEMTPVNPGVGQCCTSSYANRRPCFSSLVVDETYVPPAFSDDKFIFHKDLCQA 540

Qy        541 QGVALQTMKQEFLINLVKQKPQITEEQLEAVIADFSGLLEKCCQGQEQEVCFAEEGQKLI 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        541 QGVALQTMKQEFLINLVKQKPQITEEQLEAVIADFSGLLEKCCQGQEQEVCFAEEGQKLI 600

Qy        601 SKTRAALGV 609
              |||||||||
Db        601 SKTRAALGV 609
```